

**IN THE SPECIFICATION**

1. Please amend paragraph [0003] as follows:

[0003] In general, a cathode ray tube employed in a monitor of a computer and a television set is a display which forms images by exciting red (R), green (G), and blue (B) phosphors by landing three electron beams, which are emitted from an electron gun, [[to]] onto the phosphors of a screen via electron beam apertures of a shadow mask.

2. Please amend paragraphs [0006]-[0009] as follows:

[0006] In order to remove the above-described disadvantages, and to comply with the increased demand for larger and flatter display screens, U.S. Patent No. 3,683,063 entitled "GRID STRUCTURE FOR COLOR PICTURE TUBES", and issued on 25 January 1972 to Tachikawa et al., discloses a tension mask that is fixed to a mask frame under tension. ~~The U.S. Patent No. 3,683,063 is GRID STRUCTURE FOR COLOR PICTURE TUBES, issued on 25 January 1972 to Tachikawa et al.~~ The tension mask disclosed in Tachikawa '063 is an aperture grill type tension mask. In the tension mask of Tachikawa '063, a plurality of strips are separated from one another by a predetermined interval and supported by the mask frame under tension applied in one direction. In the shadow mask of Tachikawa '063, the thermal expansion generated during the operation of the cathode ray tube is absorbed by the applied tension~~[[,]]~~ in order to prevent the doming phenomenon. The strips, formed of thin steel with a thickness of 0.1 millimeters (mm), are not connected to proximate strips, but are supported by the mask frame at both end

parts only[[,]] so that the strips become vibrating even at a small impact, inducing the vibration of images. The mask of Tachikawa '063 has a disadvantage in that a weight of the mask frame must be increased in order to maintain the structural strength, since the tension applied to the strips is proportional to the thickness of the mask.

[0007] In order to remove the above-described disadvantages, a different tension mask is disclosed in U.S. Patent No. 4,942,332 entitled "*TIED SLIT MASK FOR COLOR CATHODE RAY TUBES*", ~~U.S. Patent No. 4,942,332~~ and issued on 17 July 1990 to Adler et al. The tension mask of Adler '332 has a valid screen part that includes a plurality of strips which are separated by a predetermined interval from one another, and a plurality of slots formed by real bridges which connect the strips to one another, wherein a long side part of the mask is fixed to supporting members. The slots formed by the real bridges have a length of approximately 5.0 millimeters or more. The Adler '332 mask has a disadvantage in that black lines are clearly generated on the screen due to the shadows of the real bridges, even though the howling phenomenon generated by the vibration of the mask due to the external impact may be reduced by the real bridges.

[0008] In order to remove the above-described disadvantages, another tension mask is disclosed in U.S. Patent No. 4,926,089 entitled "*TIED SLIT FOIL SHADOW MASK WITH FALSE TIES*", ~~U.S. Patent No. 4,926,089~~, and issued on 15 May 1990 to Moore. In Moore '089, there is disclosed a tension mask in which the generation of the black lines is restrained by a plurality of dummy bridges provided [[to]] on slots defined by the real bridges. The dummy bridges are formed in almost equal areas with the real bridges for

generating similar black lines as generated by the real bridges, thereby preventing the black lines of the real bridges from being shown to viewers. The above tension mask is generally manufactured by [[the]] photolithography. That is, a thin plate forming a mask is deposited with a photosensitive film at both surfaces, and the photosensitive films and the thin plate are etched in a predetermined pattern.

[0009] While the above-described efforts provide advantages related to cathode ray tubes, ~~we note that~~ they do have some disadvantages as explained above, and ~~we note that~~ they fail to adequately provide an efficient and convenient mask assembly for a cathode ray tube.

3. Please amend paragraphs [0012]-[0014] as follows:

[0012] The present invention is derived to resolve the above problems, and has an object ~~to provide~~ of providing a ~~visibility-improved~~ cathode ray tube with improved visibility.

[0013] In order to achieve the above and other advantages and in accordance with the purpose of the present invention, as embodied and broadly described, a mask assembly for a cathode ray tube includes a tension mask having a valid screen part for transmitting electron beams, and ~~extended~~ extending in either ~~in the~~ a longitudinal or ~~traverse~~ a transverse direction, and a mask frame for reinforcing the structural strength while maintaining the extended state of the tension mask, wherein the valid screen part includes slots, dummy slots and strip parts, the slots are provided in a predetermined area

including the center of the valid screen part, and the dummy slots are provided in an area outside the slot area.

[0014] It is preferable that the predetermined area be formed symmetrically with respect to a horizontal central line H-H and a vertical central line V-V, which respectively pass through a center point of the valid screen part.

4. Please amend paragraphs [0016]-[0020] as follows:

[0016] If it is assumed that a whole horizontal length and a whole vertical length of the valid screen part are respectively  $x'$  and  $y'$  in plane coordinates, in which horizontal and vertical directions from a left lower peak of the valid screen part are defined respectively by an axis  $x$  and an axis  $y$ , and the predetermined area is formed of an inner space which is defined by straight or curve lines connecting six points  $P_1$ - $P_6$  in sequence, wherein in the six points,  $P_1(x,y)=\{(x'/4\sim x'/3),0\}$ ,  $P_2(x,y)=\{(2x'/3\sim 3x'/4),0\}$ ,  $P_3(x,y)=\{(2x'/3\sim 3x'/4),y'/2\}$ ,  $P_4(x,y)=\{(2x'/3\sim 3x'/4),y'\}$ ,  $P_5(x,y)=\{(x'/4\sim x'/3),y'\}$ , and  $P_6(x,y)=\{(x'/4\sim x'/3),y'/2\}$ .

[0017] The rectangular area is formed of an inner space which is defined by straight or curved lines connecting six points  $P_1$ - $P_6$  in sequence, wherein in the six points,  $P_1(x,y)=(x'/4,0)$ ,  $P_2(x,y)=(3x'/4,0)$ ,  $P_3(x,y)=(3x'/4,y'/2)$ ,  $P_4(x,y)=(3x'/4,y')$ ,  $P_5(x,y)=(x'/4,y')$ , and  $P_6(x,y)=(x'/4,y'/2)$ .

[0018] The concave area is formed of an inner space which is defined by straight or curved lines connecting six points  $P_1$ - $P_6$  in sequence, wherein in the six points,

$P_1(x,y) = (x'/4,0)$ ,  $P_2(x,y) = (3x'/4,0)$ ,  $P_3(x,y) = (2x'/3,y'/2)$ ,  $P_4(x,y) = (3x'/4,y')$ ,  $P_5(x,y) = (x'/4,y')$ , and  $P_6(x,y) = (x'/3,y'/2)$ .

[0019] The convex area is formed of an inner space which is defined by straight or curved lines connecting six points  $P_1 \sim P_6$  in sequence, wherein in the six points,  $P_1(x,y) = (x'/3,0)$ ,  $P_2(x,y) = (2x'/3,0)$ ,  $P_3(x,y) = (3x'/4,y'/2)$ ,  $P_4(x,y) = (2x'/3,y')$ ,  $P_5(x,y) = (x'/3,y')$ , and  $P_6(x,y) = (x'/4,y'/2)$ .

[0020] The area formed in the only vertical part<sub>1</sub> except the central part of the valid screen part<sub>1</sub> is formed of an inner space which is defined by straight or curved lines connecting three points  $P_1 \sim P_3$  and an inner space which is defined by straight or curve lines connecting three points  $P_4 \sim P_6$ , wherein  $P_1(x,y) = (x'/4,0)$ ,  $P_2(x,y) = (x'/2,y'/4)$ ,  $P_3(x,y) = (3x'/4,0)$ ,  $P_4(x,y) = (x'/4,y')$ ,  $P_5(x,y) = (x'/2,3y'/4)$ , and  $P_6(x,y) = (3x'/4,y')$ .

5. Please amend paragraphs [0038]-[0043] as follows:

[0038] A tension mask<sub>1</sub> which has dummy slots formed by dummy bridges which are regularly disposed with the real bridges<sub>1</sub> has disadvantages as follows. Turn now to Fig. 1, which is an expanded view of principal parts of a tension mask. As shown in Fig. 1, when the mask is manufactured by etching a thin plate, a dummy bridge 108, which is provided in a slot 104 defined by a real bridge 102 and not connected to a proximate strip 106, is not in the structure of a rectangle but is spread radially toward a center of the mask, wherein such a shape of the dummy bridge 108 induces a difference of shadow areas between the dummy bridge 108 and the real bridge 102.

[0039] Therefore, due to the difference generated in the area ratio, the shadow of the dummy bridge 108 becomes smaller than that of the real bridge 102, so that the problem of the prior art having the real bridges only is not resolved and the black lines may be observed by the views clearly.

[0040] The black lines are generated over the whole screen in the positions of the real bridges regularly, but more largely in the center and vertical part of the screen, where the electron beams are not deflected right and left, and thereby the fine view is degraded due to the black lines in the upper and lower parts of the center.

[0041] The present invention will be explained in more detail with reference to the preferred embodiments in ~~junction~~ conjunction with the attached drawings. The present invention includes a mask assembly formed to have a tension mask with a screen part for transmitting electron beams. The mask assembly can be used with a cathode ray tube. The screen part includes real slots, dummy slots, real bridges, dummy bridges, and strip parts. The screen part has a first portion and a second portion. The first portion has real bridges, dummy bridges, and dummy slots. The second portion has real bridges and real slots, but no dummy bridges and no dummy slots. The second portion of the screen part can be said to be associated with a region of a screen of a cathode ray tube that traditionally is known for degraded images due to the undesired black lines described above. The second portion of the screen part, when it is formed in accordance with the principles of the present invention, can provide an improved clarity without the undesired black lines. The second portion of the screen part is formed to have real bridges, real

slots, no dummy bridges, and no dummy slots, in order to provide an improved clarity and improved visibility. The mask assembly has ~~[[the]]~~ a tension mask which ~~is extended~~ extends in either ~~[[in]]~~ a longitudinal or ~~traverse~~ a transverse direction, and a mask frame for reinforcing the structural strength while maintaining an extended state of the tension mask.

[0042] Turn now to Fig. 2, which is a perspective view of a disassembled mask assembly for a cathode ray tube, in accordance with the principles of the present invention. As shown in Fig. 2, a mask assembly mounted on a panel (not shown) by a predetermined distance from a screen (not shown), includes a tension mask 12 serving as a color discrimination electrode, a mask frame 14 for supporting the tension mask 12, and a plurality of spring assemblies (not shown) for fixing the mask frame to the panel (not shown), wherein the mask frame 14 includes a pair of supporting members 14a disposed facing long side parts of the mask 12 which are to be applied with tension, and a pair of elastic members 14b for maintaining a predetermined distance between the supporting members 14a. The elastic members 14b cause the mask 12 to be tensioned.

[0043] The tension mask 12, ~~extended~~ extending in the vertical direction of a screen and fixed to the pair of supporting members 14a, is formed by etching ~~[[a]]~~ thin aluminium killed (AK) steel or INVAR steel with a predetermined pattern, wherein a valid screen part 18 is formed on the tension mask 12 by the etching, ~~to pass~~ and passes through electron beams emitted by an electron gun (not shown).

6. Please amend paragraph [0047] as follows:

[0047] The valid screen part 18 includes a plurality of strips 22 separated from one another by a predetermined distance, slots 20 and dummy slots 20', a plurality of real bridges 24 and 24' for connecting proximate strips 22 to one another, and a plurality of dummy bridges 26 which are provided to the slots defined by the real bridges 24', but which are not connected to the proximate strips, as shown in Fig. 3. The slots 20 can be referred to as real slots 20, which are different ~~[[than]]~~ from the dummy slots 20'. Accordingly, the slots 20 are formed by the strips 22 and ~~[[the]]~~ real bridges 24, and the dummy slots 20' are formed by the strips 22, ~~[[the]]~~ real bridges 24' and ~~[[the]]~~ dummy bridges 26.

7. Please amend paragraph [0055] as follows:

[0055] Using the same plane coordinate system of Fig. 3, ~~[[the]]~~ Fig. 4 can now be described further. As shown in Fig. 4, the concave area A may be formed of an inner space which is defined by straight lines or curve lines (shown in dotted lines) connecting six points  $P_1 \sim P_6$  in sequence, wherein  $P_1(x,y) = (x'/4,0)$ ,  $P_2(x,y) = (3x'/4,0)$ ,  $P_3(x,y) = (2x'/3,y'/2)$ ,  $P_4(x,y) = (3x'/4,y')$ ,  $P_5(x,y) = (x'/4,y')$ , and  $P_6(x,y) = (x'/3,y'/2)$ .

8. Please amend paragraph [0057] as follows:

[0057] Using the same plane coordinate system of Fig. 3, ~~[[the]]~~ Fig. 5 can now be described further. As shown in Fig. 5, the predetermined area A may be formed of an



inner space which is defined by straight lines or curve lines (shown in dotted lines) connecting six points  $P_1 \sim P_6$  in sequence, wherein  $P_1(x,y) = (x'/3,0)$ ,  $P_2(x,y) = (2x'/3,0)$ ,  $P_3(x,y) = (3x'/4,y'/2)$ ,  $P_4(x,y) = (2x'/3,y')$ ,  $P_5(x,y) = (x'/3,y')$ , and  $P_6(x,y) = (x'/4,y'/2)$ .

9. Please amend paragraphs [0059]-[0060] as follows:

[0059] Using the same plane coordinate system of Fig. 3, [[the]] Fig. 6 can now be described further. As shown in Fig. 6, the areas A may be formed of an inner space which is defined by straight lines (shown in dotted lines) or [[curve]] curved lines connecting three points  $P_1 \sim P_3$  in sequence, and an inner space defined by straight lines (shown in dotted lines) or [[curve]] curved lines connecting three points  $P_4 \sim P_6$  in sequence in the same plane coordinates of the embodiments as shown in Fig. 3 to Fig. 5, wherein  $P_1(x,y) = (x'/4,0)$ ,  $P_2(x,y) = (x'/2,y'/4)$ ,  $P_3(x,y) = (3x'/4,0)$ ,  $P_4(x,y) = (x'/4,y')$ ,  $P_5(x,y) = (x'/2,3y'/4)$ , and  $P_6(x,y) = (3x'/4,y')$ . As shown in Fig. 6, the inner area A can be ~~formed~~ in the form of segregated sub-parts.

[0060] Regarding Fig. 6, the line connecting points  $P_1$  [[to]] and  $P_2$  can be straight or curved. Regarding Fig. 6, the line connecting points  $P_2$  [[to]] and  $P_3$  can be straight or curved. Regarding Fig. 6, the line connecting points  $P_1$  [[to]] and  $P_3$  can be straight or curved. Regarding Fig. 6, the line connecting points  $P_4$  [[to]] and  $P_5$  can be straight or curved. Regarding Fig. 6, the line connecting points  $P_5$  [[to]] and  $P_6$  can be straight or curved. Regarding Fig. 6, the line connecting points  $P_4$  [[to]] and  $P_6$  can be straight or curved.

10. Please amend paragraph [0066] as follows:

[0066] If it is assumed that a whole horizontal length and a whole vertical length of the valid screen part are respectively  $x'$  and  $y'$  in plane coordinates, in which horizontal and vertical directions from a left lower peak of the valid screen part are defined respectively by an axis  $x$  and an axis  $y$ , the predetermined area is formed of an inner space which is defined by straight or curved lines connecting six points  $P_1$ - $P_6$  in sequence, wherein in the six points,  $P_1(x,y)=\{(x'/4 \sim x'/3), 0\}$ ,  $P_2(x,y)=\{(2x'/3 \sim 3x'/4), 0\}$ ,  $P_3(x,y)=\{(2x'/3 \sim 3x'/4), y'/2\}$ ,  $P_4(x,y)=\{(2x'/3 \sim 3x'/4), y'\}$ ,  $P_5(x,y)=\{(x'/4 \sim x'/3), y'\}$ , and  $P_6(x,y)=\{(x'/4 \sim x'/3), y'/2\}$ . Thus, in accordance with the principles of the present invention, each of the six points  $P_1$  to  $P_6$  can be placed within a defined range of locations. The point  $P_1$  can be placed such that the  $y$  coordinate is 0, and the  $x$  coordinate is anywhere from  $x'/4$  to  $x'/3$ , inclusive. The point  $P_2$  can be placed such that the  $y$  coordinate is 0, and the  $x$  coordinate is anywhere from  $2x'/3$  to  $3x'/4$ , inclusive. The point  $P_3$  can be placed such that the  $y$  coordinate is  $y'/2$ , and the  $x$  coordinate is anywhere from  $2x'/3$  to  $3x'/4$ , inclusive. The point  $P_4$  can be placed such that the  $y$  coordinate is  $y'$ , and the  $x$  coordinate is anywhere from  $2x'/3$  to  $3x'/4$ , inclusive. The point  $P_5$  can be placed such that the  $y$  coordinate is  $y'$ , and the  $x$  coordinate is anywhere from  $x'/4$  to  $x'/3$ , inclusive. The point  $P_6$  can be placed such that the  $y$  coordinate is  $y'/2$ , and the  $x$  coordinate is anywhere from  $x'/4$  to  $x'/3$ , inclusive. Therefore, in accordance with the foregoing ranges for the six points  $P_1$  to  $P_6$ , the enclosed area can have a rectangle shape, a concave shape, or a convex shape.

11. Please amend paragraph [0068] as follows:

[0068] Therefore, the tension mask, according to the present invention as described hereinabove, is provided with the real bridges in the weak portions in which the black lines are apt to be generated, so that the degradation of the fine view may be essentially resolved without any influence of the etching, thereby improving the definition of the screen.